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ABSTRACT

An experimental screening device designed to predict future academic failure in kindergarten children was administered to a group of kindergarten children in April. The prediction of success or failure made on the basis of the screening was correlated with the results of standardized reading readiness tests, as well as standardized achievement tests in first and third grades, and with chronological age. The point biserial correlations between predicted success-failure and actual achievement in reading and arithmetic were significant at the .01 level. Correlations between age and achievement were not significant. The efficiency was 100% and the effectiveness was 82%. (Author)

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A QUICK TEACHER-ADMINISTERED SCREENING TEST TO PREDICT FUTURE ACADEMIC FAILURE IN KINDERGARTEN CHILDREN

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Much attention has been paid in the literature to the importance of predicting readiness for reading (Stauffer, 1969, de Hirsch, 1966). Parents and educators alike have felt that if children could be given remedial instruction at an early age, they might avoid some of the emotional problems commonly seen to accompany learning disabilities in children in the grades (de Hirsch, 1969), and that if the children are not properly identified at an early age, they may be too old to be remediated when they are finally diagnosed. (Buktenica, 1971 Benton, 1962). It is for this reason that several studies have been undertaken to devise testing procedures to locate potentially learning disabled children at the kindergarten level, when they are first available to the public schools for testing (de Hirsch, 1966, Medvedeff, 1969, Landsman and Dillard, 1967). Most of the tests which have been devised involve either a school psychologist as the administrator, or trained teachers, and require a long enough period of time to administer that they are not practical for administration as a screening procedure in most public schools.

The Checklist of Kindergarten Behaviors was devised as a quick screening device which can be used by a teacher with no previous training in either techniques of testing or in diagnosis of learning disabilities. It is to be used as a screening device to locate children who show behaviors which may indicate they are potentially academically disabled and should be referred to the psychologist for further testing. No attempt is made to determine the cause or nature of the potential disability. In the group of children in this study, all of the children who failed to achieve at grade level by the end of first grade in one or more areas were in fact located by use of the Checklist.

RELATED RESEARCH

The most extensive study into the early identification of learning disabilities was that done by de Hirsch, et al (1966). They studied 53 children in four visits over a period of three years, starting when they were in kindergarten. Each child was given 37 tests in kindergarten and a profile was drawn indicating his strengths and weaknesses in the areas of behavior patterning, motility patterning, gross motor patterning, fine motor patterning, laterality, body image, auditory perceptual patterning, receptive language, expressive language, sentence development, reading readiness tests, and style. At the end of first and second grades, the children were re-tested for achievement, and some of the original tests were re-administered so developmental patterns would be noticed. Several patterns were noted in the children who later failed in reading, and among the recommendations made is one for a transitional class between kindergarten and first grade.

The results of de Hirsch's study showed that IQ and family background factors did not predict success at the end of second grade. Most predictive of later behavior were tests of hyperdistractibility, disinhibition, and hyperactivity, the test of Pegboard Speed, and human-figure drawings. Also included were the Bender Visuo-Motor Gestalt Test and oral language

tests. The best predictor among the expressive-language tests was the Number of Words Used in a Story. Several tests of reading readiness were also predictive, as was the ability to name letters of the alphabet. Ego strength and work attitude were correlated with achievement tests.

The Evanston Early Identification Scale (Landsman and Dillard, 1967) is an attempt to devise a faster, more general screening test to kindergarten children. The test is based on the Draw-A-Person Test (Goodenough, 1963). It uses a more general scoring system, giving points for parts which are omitted. Children are then assigned to groups on the basis of scores they attain. They are considered to be of high-risk, middle-risk and low-risk on this basis. In this study, 73 percent were correctly referred, and 97.5 percent were correctly predicted to pass. The children who fell in the middle range were the ones who could not be predicted to fail or succeed on the basis of this test.

Medvedoff and Dearth (1969) used a questionnaire to screen children for motor, perceptual, psychological and physical development. The also provided some tasks for the child to perform, calling for observations from the teacher on the method of performance. They found significant differences between the performance of achievers and non-achievers.

In another study, Ferinden and Jacobson(1970) found that the Wide Range Achievement Test and the Evanston Early Identification Scale were the most reliable screening tools for predicting which kindergarten children would fail in first grade and suggested that kindergarten teachers be taught to administer both tests. Lowell (1971) found that most of the factors commonly used in reading readiness tests were not actually predictive of success in reading, and that only one factor currently used in readiness tests, ability to name the letters, should actually be included in a test of this nature.

All of the research that has been done in this area has concentrated on reading as the measure of achievement in first grade, and all of the tests that have been used have required training for the teacher to use them, or a psychologist to give them.

METHOD

The teacher-administered Checklist of Kindergarten Behavior was given to the teacher of a single kindergarten class in a midwestern public school in a middle-class suburban community. No child in the class was previously suspected of having any form of academic disability. There were seventeen children in the class. Nine children were boys and eight were girls. The median age at the time of the initial screening was 72 months, and the range was from 66 months to 86 months. The initial screening was done in April of the kindergarten year. The teacher was given the screening sheets and asked to use one for each child, to put the name, age and sex of the child at the top of the sheet, and to check any behavior which the child exhibited in class. The teacher was not informed of the purpose of the test, or of the results. The school was not informed of the results of the screening, and none of the children involved was given a special placement, further testing, or any program of remediation during the first grade year. All the children were mixed with children from other kindergarten classes in the same school in heterogeneous first grade groupings.

In May the teacher administered Metropolitan Reading Readiness Tests to all the children as part of the school's regular testing program, and all the scores were made available for inclusion in this study.

In May of the first grade year, the same children were each given the Wide Range Achievement Test. At this time, the median age of the children was 84.6 moths with a range from 78 months to 98 months. The results were analyzed to see whether the children who had received checks on the Checklist at the end of kindergarten had in fact failed to achieve at or above grade level by the end of first grade, and also to see whether any of the children who were not predicted to fail in first grade had done so.

In October of the third grade year the same children were given the Otis-Lennon Test of Mental Ability and the Comprehensive Test of Basic Skills and again the results were made available for this study and were analyzed to see whether the children who had received checks on the Checklist in kindergarten had failed to achieve at or above grade level by third grade, and whether any of the children who had been predicted to pass were failing at that time. By this time two of the children who had been predicted to fail were in special education settings and for this reason their test scores were not available for inclusion in the results.

RESULTS

Table I presents the data related to the validity of the screening procedures used.

TABLE I

SCREENING VALIDITY

Variable	Statistic
Effectiveness	100%
Efficiency	82%
ϕ	.87

The effectiveness of the procedure was perfect in this sample, and the efficiency was 82 percent. The phi coefficient between predicted success-failure and actual pass-failure was .87(p.01).

The point-biserial correlations between predicted success-failure and selected subtest variables, including Metropolitan Reading Readiness and Wide Range Achievement Test scores are presented in Table II.

TABLE II

POINT BISERIAL CORRELATIONS BETWEEN PREDICTED SUCCESS-FAILURE AND SELECTED SUBJECT VARIABLES

Variable	r_{pb}	P
Reading	.6	.01
Spelling	.29	ns
Arithmetic	.59	.01
Chronological Age	.0356	ns

All of the correlations were significant except those between success-fail and chronological age, and between success-fail and Metropolitan Reading Readiness Subtest Two.

Table III gives t-test comparison of Metropolitan and Wide Range Achievement Test scores for the groups predicted for success and failure. All of the correlations were significant except that for Metropolitan Reading Readiness Subtest Two.

TABLE III

T-TEST COMPARISONS OF TESTS SCORES FOR GROUPS PREDICTED FOR FAILURE AND SUCCESS

Tests	Failure		Success		t	P
	$\bar{X}$	SD	$\bar{X}$	SD		
MRR-1	10.6	1.51	13.80	2.00	2.95	.02
MRR-2	10.4	1.81	11.60	1.86	1.14	NS
MRR-3	8.2	2.94	11.70	1.68	2.90	.02
MRR-4	11.2	3.11	14.80	1.17	3.27	.01
MRR-5	10	2.54	19.60	2.01	7.76	.001
MRR-6	5.8	2.94	11.50	1.69	4.72	.002
MRR(total)	56.2	9.49	83.40	6.99	6.32	.001
WRAT-1	27.5	7.52	48.45	10.97	4.14	.002
WRAT-2	18.83	8.20	30.90	4.10	2.37	.05
WRAT-3	17.66	3.66	23.36	1.62	4.48	.002

All of the Pearson Product-Moment correlations were calculated between chronological age and Wide Range Achievement Test scores and predicted success or failure. These correlates are given on Table IV. None of the correlations were significant.

TABLE IV

CORRELATIONS BETWEEN CHRONOLOGICAL AGE AND WIDE RANGE ACHIEVEMENT TEST SCORES AND PREDICTED SUCCESS-FAILURE

Variable	r	p
Reading	-.12	NS
Spelling	-.01	NS
Arithmetic	-.21	NS
Predicted success-failure	-.0356	NS

Table V gives the average achievement scores of the two groups at the time of the testing in third grade, At this time there was a mean difference in stanines of three between the two groups.

TABLE V

TEST	$\bar{X}$ STANINE PREDICTED PASS	$\bar{X}$ STANINE PREDICTED FAIL
Otis-Lennon	5.70	4.33
Reading Vocab.	5.44	2.75
Lang.Mechanics	5.60	2.00
Arith.Comp.	5.30	2.50
Arith. Applic.	5.40	2.75
Refer. Material	NG	NG
Reading Comp.	5.44	2.00
Lang. Express.	5.60	2.00
Arith. Concepts	5.30	2.25
Study Skills	6.1	2.50
Graphic Mat'l	5.30	2.75

DISCUSSION

One of the oldest problems in the field of learning disabilities has been that of detecting the problem early enough to undertake a successful program of remediation, and hopefully early enough to avoid any feelings of failure and the subsequent development of emotional problems. Several tests have been developed for predicting or diagnosing learning problems, but all of them have required either special training or considerable lengths of time for administration. There has been no quick way to get the child referred by the kindergarten teacher to the school psychologist.

The Checklist of Kindergarten Behaviors was developed to fill this gap. It is designed to be administered quickly, by a teacher with no special training. There are no complicated instructions and no clinical judgments to be made. The teacher is asked to use one list for each child in the class, and to put the name, age and sex on the top of the page, then to check any behavior that particular child exhibits in class. The papers can then be collected by the office and used as referral lists. The principal or psychologist sorts the papers, and any child who has received a check mark can be referred for further testing and evaluation. This eliminates the need for

lengthy and difficult psychological evaluations for the entire class. At the same time, there are several months in which to test and evaluate the children who have been referred, so that appropriate placement and remedial programs can be arranged. The Checklist has been written in simple non-technical language so that teachers can use it quickly and without difficulty. No attempt is made to diagnose the type of problem or its extent or complexity. This is the purpose of the more extensive psychological tests.

Because of the developmental nature of the behaviors lited, some children will be referred who do not later develop academic difficulty, but these children should be sorted out by the more extensive tests. This was the case with the one little girl in this study who did achieve at grade level. After the study was completed and results could be discussed with the teachers, her teacher said that she had great difficulty at the beginning of the year, but had done well in the last few months.

If more time were available, it would be desirable to have another follow-up study after the same children have reached the middle grades to see whether the same children have continued to have academic difficulties.

The most significant result of this study is that none of the "passed" children had academic difficulties in first grade. It would not be nearly as undesirable to test "extra" children as it would be to miss some children who later became academic failures. This should become an easy effective screening device for schools to use.

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